NPLCC Focus Groups Project:

Early Results and Continuing Efforts to Help Inform Climate Change Science Priorities

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Presented to NPLCC Science and Traditional Ecological Knowledge Sub-Committee

February 29, 2012

Introduction

- The project informs key climate change questions:
  - What are the current and future impacts of climate change on fish, wildlife, habitats, and ecosystems?
  - How do we prepare for climate change?
  - What science, information, and tools are needed to address climate change effects on fish, wildlife, conservation practice, and sustainable resource management?
  - How might planning, permitting, and management change in order to prepare effectively for projected climate impacts?

Outline

- Methodology
- Survey responses & themes
- Early results from web-based focus groups
- Key themes from yesterday's expert workshop

Methodology: Overview

Phase I Reports

Phase II Survey & Web-based Focus Groups

Phase II Expert Workshops

Final Products

Methodology: Phase I Reports

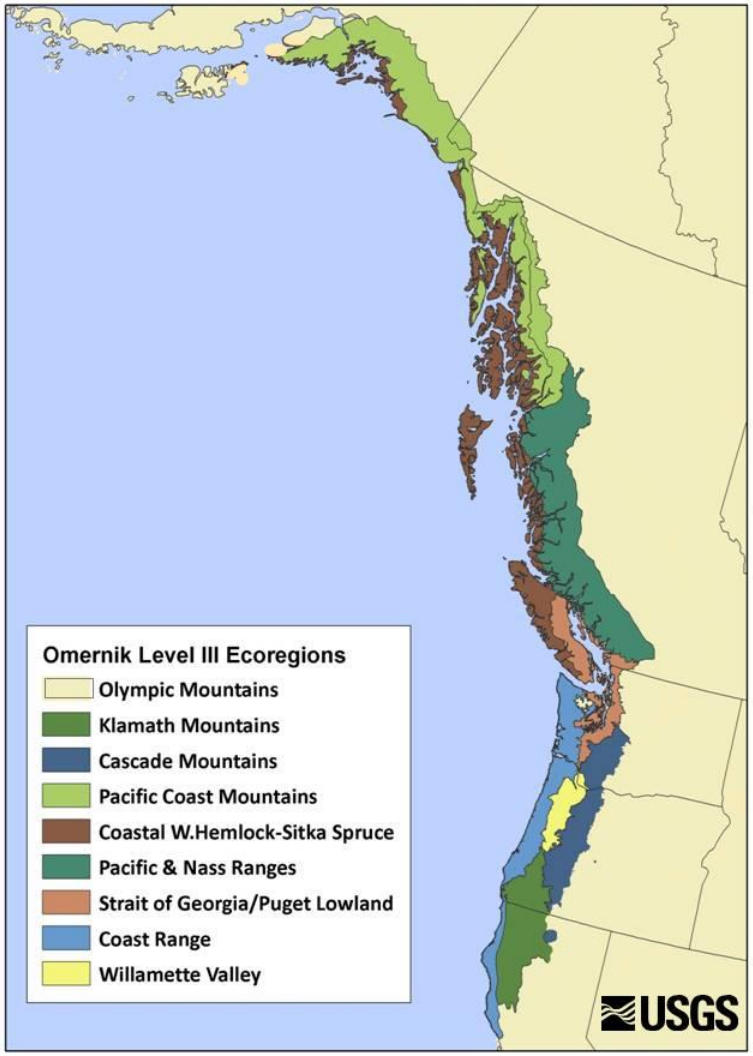
Phase I Reports: climate impacts & adaptation approaches in NPLCC's marine and freshwater ecosystems → first-ever

- 400+ resources reviewed
- 100+ people interviewed
- 63 reviewers
- **Reference documents – first-ever for NPLCC**
- Goal: Identify how climate change is impacting marine & FW species, habitats, and ecosystems in NPLCC; identify adaptation approaches
- Draft final reports completed August 2011

Methodology: Phase II Survey & Web-based Focus Groups

Phase II Survey & Web-based Focus Groups: challenges & information needs for managing species, habitats, & ecosystems at sub-NPLCC scale

- 10 web-based focus groups, sub-NPLCC scale
- 100+ participants
- Goal: Identify climate change-related information needs for key regions in NPLCC
- Completed February 2012



Source: U.S. Geological Survey

- Marine Web Groups
  - SC/SE Alaska
  - BC Coast
  - Puget Sound/Georgia Basin
  - California Current (2)
- FW Web Groups
  - AK/BC Coast
  - Pacific Coast/Nass Ranges
  - Puget Sound/Georgia Basin
  - Columbia River Basin
  - WA/OR/n. CA Coast Ranges & Drainages

Methodology: Phase II Expert Workshops

Phase II Expert Workshops: commonalities and differences across NPLCC, specificity on science and non-science needs, cross-boundary collaboration, NPLCC scale

- 2 expert workshops
- Feb. 28 (Portland), April 20 (Juneau)
- <50 participants each
- Goal: Identify NPLCC-scale climate change information needs and inform climate change science prioritization at NPLCC scale

Methodology: Final Products

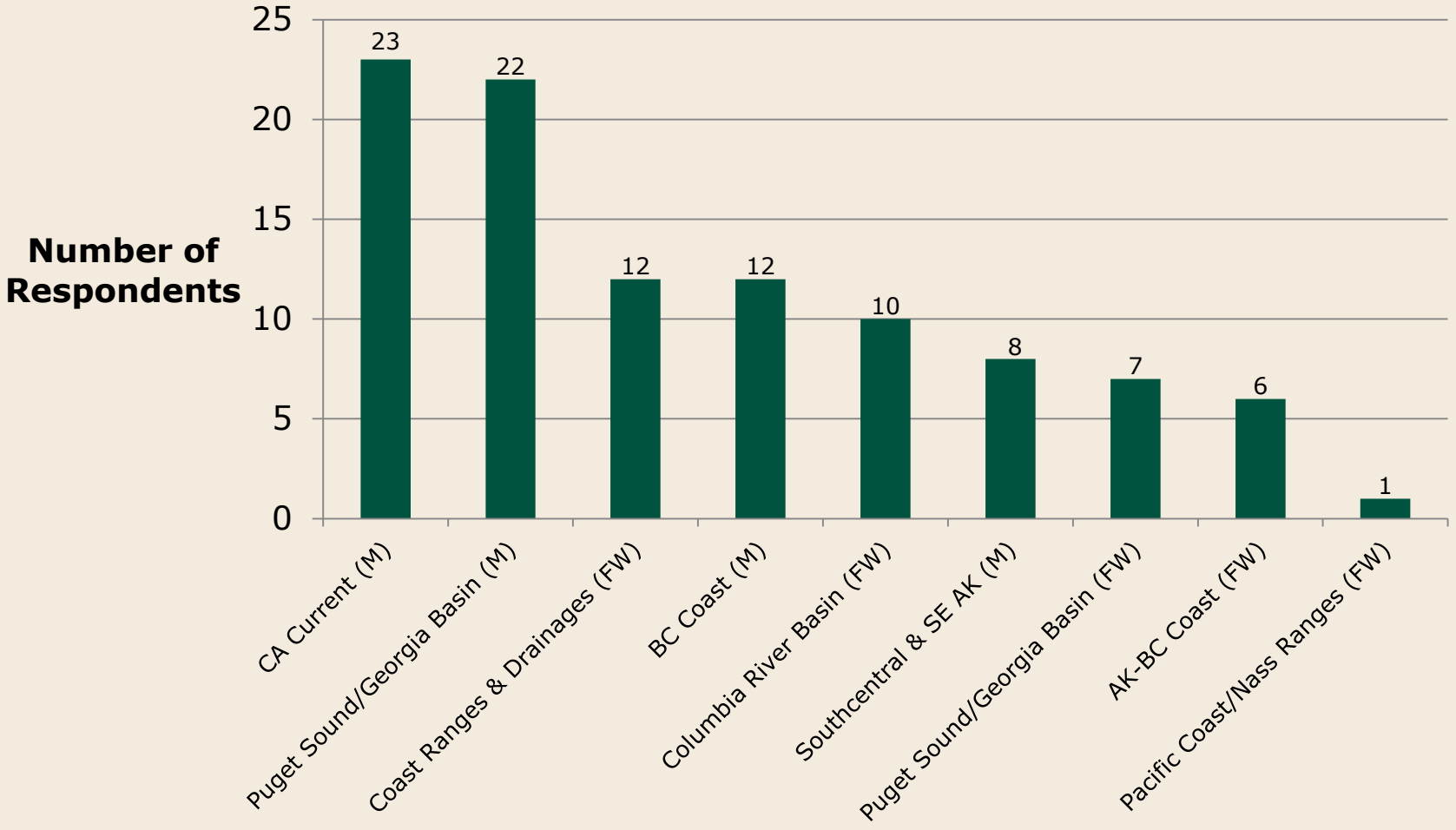
Final Products: Phase 1 Final Reports and Phase 2 Report

- Finalize Phase 1 Draft Final Reports
- Produce Phase 2 Focus Groups Report
- Documents available for review by focus group participants and other experts
- Expected completion Summer 2012

Methodology: Summary

Phase of Project	Goal/Purpose	Status
Phase I Reports	Provide baseline understanding	Draft: Aug. 2011 Final: Summer 2012
Phase II Survey & Web-based Focus Groups	Examine and identify information gaps and next steps	Completed Feb. 2012
Phase II Expert Workshops		Will be completed April 2012
Final Products	Inform climate change prioritization & planning	Will be completed Summer 2012

Which focus group(s) are you participating in?



Survey Themes

Science Needs

- **Identifying and using science, data, tools, and/or information**
  - Decision-support, mapping, "Climate Clearinghouse"
- Addressing uncertainty
- What are the key questions and priorities?

Non-science Needs

- **Capacity** (people, financial, technical, political, institutional)
  - Guidance documents, leverage funding
- **Institutional, political, cultural, and/or social factors**
- Coordination, collaboration, and communication

Early results: Web-based focus groups

- NPLCC Regional Commonalities
  1. Science Needs for Marine and Freshwater Ecosystems
  2. Need for tools
  3. Need to better coordinate information sharing and knowledge exchange
  4. Need to better facilitate cross-boundary and cross-organizational collaboration
  5. Need for improved outreach and education with public and decision makers
- NPLCC Sub-Regional Differences
  1. Need to assess impact of hydropower projects on FW systems in BC and AK
  2. Focus of work in BC and Strait of Juan de Fuca is more municipal and local *versus* federal and state elsewhere
  3. Contrast between quantity and quality of data for California Current Region's marine and freshwater systems

CLIMATE IMPACTS GROUP
Climate Science in the Public Interest

U.S. FISH & WILDLIFE SERVICE

NATIONAL WILDLIFE FEDERATION

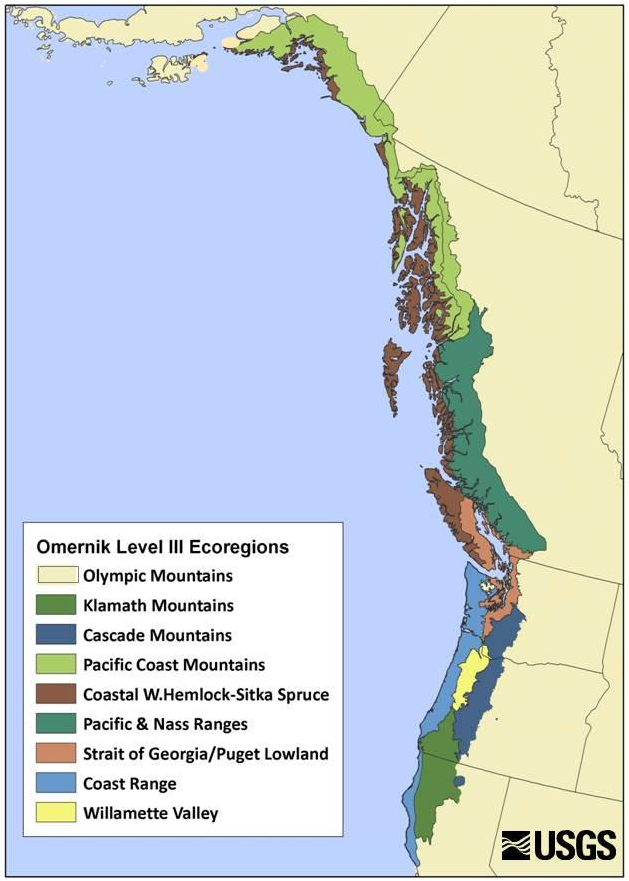
NPLCC Sub-Regional Differences

1. Need to assess impact of hydropower projects on freshwater systems in BC and AK
   - *We can't legitimately review [hydropower projects] without having a pretty good handle on what climate change will mean to the hydrological cycle… (Southcentral and Southeast Alaska)*

2. Focus of work in BC and Strait of Juan de Fuca is more municipal and local *versus* federal and state elsewhere
   - *there is currently a move to work not at the federal level but at the local; community and municipality level…We need directions for local and regional work. (BC Coast Marine)*

NPLCC Sub-Regional Differences

3. Contrast between quantity and quality of data for California Current Region's marine and freshwater systems
   - Lack of data in coastal freshwater drainages



Source: U.S. Geological Survey

Expert Workshops: Five Questions

NPLCC Regional Commonalities

1. Science Needs
2. Tools and associated training
3. Information coordination & exchange
4. Cross-boundary issues
5. Education & outreach

Expert Workshops

- Morning break-out groups
- Afternoon break-out groups

Feb. 28 Expert Workshop: Emerging roles for NPLCC

1. Provide **capacity** to address climate change
   - Sedimentation and tidal elevation data
   - Climate-smart sensor network
   - Climate change impacts & information needs in terrestrial systems
   - Geospatial data platform
   - Information portal or reference librarian
   - Targeted vulnerability assessments, species and habitat science
   - Integrated tools at multiple scales

2. **Convene** scientists, managers, and practitioners
   - Workshops, webinars, conferences, training

3. Build and facilitate maintenance of **partnerships**

1. Provide capacity to address climate change

- Sedimentation data
  - *To understand the impact that SLR will have on the nearshore, you need to know the relative contribution of sediment supply and how that will change over time. (PS/GB FW)*
  - LCC-wide, estuarine and alongshore sediment transport

Dispersal of Columbia River sediment throughout a littoral cell
Image: WA Department of Ecology

Image: http://www.ecy.wa.gov/programs/sea/swces/research/sediment_budget.htm (accessed 2.27.2012)

1. Provide capacity to address climate change

- Tidal elevation data
  - *Need a SLR inundation map for the Humboldt Bay region, but we get pushback from private land owners on local land use planning agencies (CA Current #1)*
  - *Vertical elevation data will be important for every community. Already great work going on, more would be helpful. (CA Current #2)*
  - LCC-wide

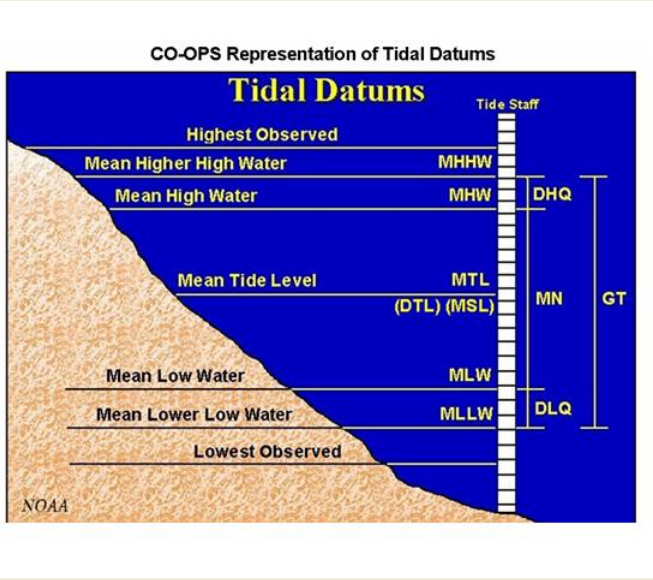


Image: NOAA

Image: http://tidesandcurrents.noaa.gov/datum_options.html (accessed 2.27.2012)

1. Provide capacity to address climate change

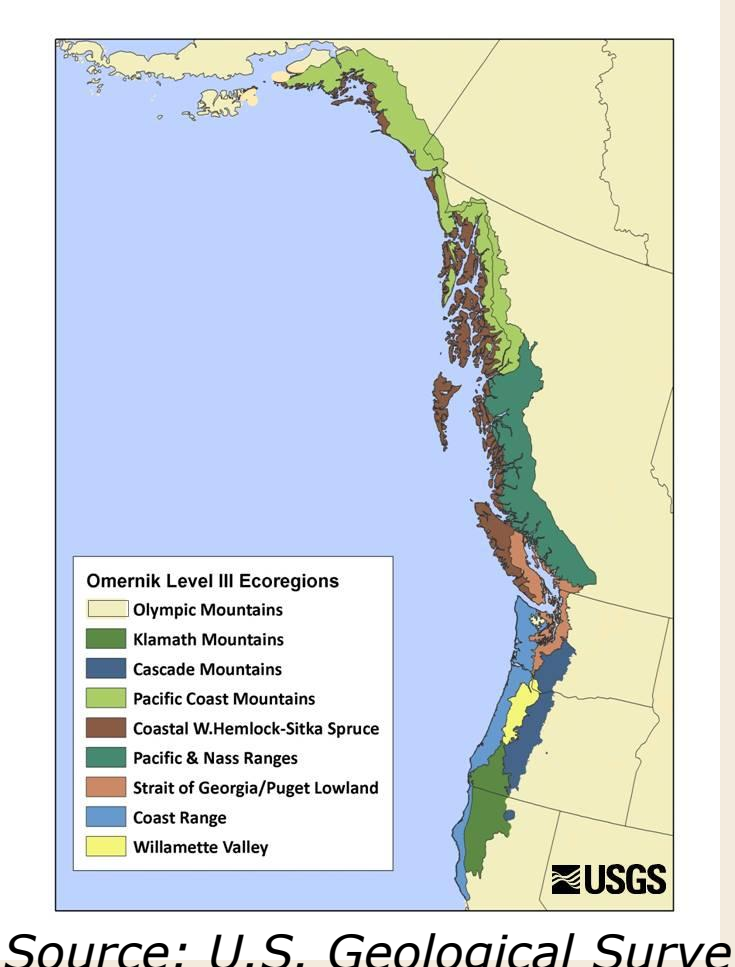
- Hydrologic monitoring network
  - *There is little collaboration across research projects which means that there are holes in the research.*
  - *Data is not collected in a useful framework…is limited and unorganized. (AK-BC Coast)*
  - LCC-wide continuous data, stream discharge, water temp.

Image: Eric S. Wakeman, U.S. Geological Survey

Image: http://pubs.usgs.gov/fs/2005/3113/ (accessed 2.28.2012)

1. Provide capacity to address climate change

- Climate change effects, information gaps and needs for terrestrial systems
  - Majority of land is forested
  - Need to understand link between marine, freshwater, and terrestrial environments



Source: U.S. Geological Survey

1. Provide capacity to address climate change

- Geospatial data platform
  - "One-stop shop" integrated with CSCs, other LCCs, and/or other similar platforms
  - Personal brain software
  - Data sets organized around problems and needs of users
  - Use a community portal format and consider hosting in a university environment
  - Leverage graduate student interest in this type of work

1. Provide capacity to address climate change

- Information portal or reference librarian

  - *Need to be aware of who's working where and on what – just brief – to know how to get in touch. (CA Current #1)*

  - *I would like to argue for not just a clearing house but for a library service.*
    (CA Current #1)

1. Provide capacity to address climate change

Targeted vulnerability assessments, species & habitat work

- Ocean acidification, hypoxia, & food web impacts
  - Effects of CO_2 on primary productivity, study mass extinctions
- Coldwater fishes (salmon, bull trout, groundfishes, forage fishes, etc.)
  - Rapid risk assessment, distribution maps and vulnerability of species and stressors, life cycle analysis of species at multiple scales, transboundary process models

1. Provide capacity to address climate change

- Eelgrass – vulnerability, sequestration potential
  - Watershed & LCC-scale physical & ecological impacts on distribution, quantify ecosystem services, evaluate restoration performance and effectiveness with maps
- Cumulative impacts on coastal habitat type and distribution
  - Vulnerability assessment
- Invasive species and disease
  - Database and modeling of invasive species and disease, hybridization genetics, fish disease under warming climate, vulnerability assessment

1. Provide capacity to address climate change

- Particular types of tools
  - Wetland visualization at permitting & population segment scale
  - Expanded NetMap
  - Map of intertidal zone
  - Migration zones for estuaries, wetlands, etc.
- Cross-reference tools
- Training

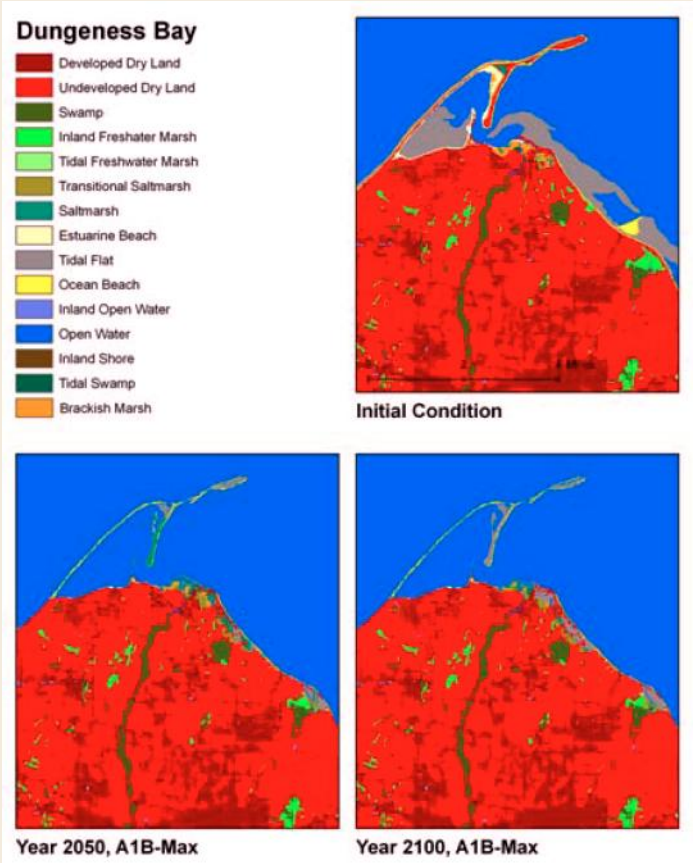


Image: Glick et al. (2007)

Image: Glick et al. (2007). SLR and Coastal Habitats in the PNW. p. 53.

2. Convene scientists, managers, and practitioners

- Workshops, webinars, conferences, training
  - ***What I would see as a priority for the NPLCC is facilitating workshops*** *or something like that to go to tribal communities and working to see what is known about what changes are occurring across local scales. Resources that are associated with that.(CA Current #1)*
- Addressing political and institutional barriers
  - *NPLCC could **help create narrative** to the political component…limit it to the **top 3-5 issues for certain years**. (CA Current #2)*

3. Build and facilitate maintenance of partnerships

- Leverage resources and connect projects

  - *…if someone has some funding for restoration and someone else has funding for research **if there is a way to pair them up and get a bigger bang for the buck**…. (CA Current #1)*

3. Build and facilitate maintenance of partnerships

- Communicate climate change

  - ***How are we going to deal with [consequences of climate-related extreme events] from a social standpoint…****when it's not slow and steady sea-level rise but the events. (PS/GB FW)*

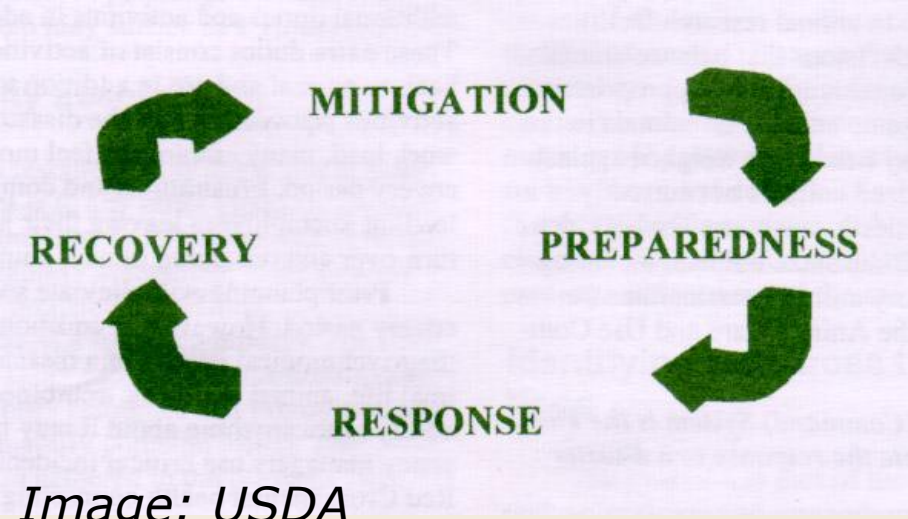


Image: USDA

Digital Vision

Image: http://www.nal.usda.gov/awic/newsletters/v11n1/11n1heat.htm (accessed 2.28.2012)

Summary

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2. **Convene** scientists, managers, and practitioners
   - Workshops, webinars, conferences, training
   - Address political and institutional barriers

3. Build and facilitate maintenance of **partnerships**
   - Leverage resources and connect projects
   - Communicate climate change

Summary

Phase of Project	Summary
Phase I Reports	Two reference documents that provide baseline understanding of climate change in marine and FW environment.
Phase II Survey & Web-based Focus Groups	Examine and identify information gaps and next steps. Sub-NPLCC scale. Five regional commonalities and three sub-regional differences emerging.
Phase II Expert Workshops	Examine and identify information gaps and next steps. NPLCC scale. Emerging roles for NPLCC (capacity, convene, partner).
Final Products	Inform climate change prioritization & planning in NPLCC. 3 reports.

Conclusion & Contact Information

* Each phase better defines applied science and non-science needs for advancing climate change adaptation in conservation and sustainable resource management activities in the NPLCC

- Phase I Draft Final NPLCC reports available at:
  - http://www.nwf.org/Global-Warming/Climate-Smart-Conservation/Adaptation-Reports.aspx

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Acknowledgments

- U.S. Fish & Wildlife Service Region 1 Science Applications Program
- North Pacific Landscape Conservation Cooperative
- Mary Mahaffy and John Mankowski, U.S. FWS & NPLCC
- Lara Whitely Binder, UW Climate Impacts Group
- Karen Jenni, Insight Decisions, LLC